

**Claims**

What is claimed is:

1. A time multiplexed multiple carrier transmitter comprising:  
  
a first data encoder for producing first transmit data;  
  
a second data encoder for producing second transmit data;  
  
a digital multiplexer coupled to the first and the second data encoder, the digital multiplexer including a transmit signal output;  
  
a power amplifier;  
  
a transmit frequency upconverter coupled between the transmit signal output and the power amplifier; and  
  
a multiplexer control circuit coupled to the digital multiplexer through a multiplexer control input, the multiplexer control circuit producing a multiplexer control signal on the multiplex control input to select between the first and second data encoders according to a predetermined transmit schedule.
2. The time multiplexed multiple carrier transmitter of claim 1, wherein the predetermined transmit schedule selects the first data encoder more frequently than the second data encoder to deliver a predetermined target power.

3. The time multiplexed multiple carrier transmitter of claim 1, further comprising a digital to analog converter coupled between the transmit frequency upconverter and the power amplifier.

4. The time multiplexed multiple carrier transmitter of claim 1, further comprising a digital to analog converter coupled between the digital multiplexer and the transmit frequency upconverter.

5. The time multiplexed multiple carrier transmitter of claim 1, wherein at least one of the first data encoder and second data encoder includes a first intermediate frequency upconverter.

6. The time multiplexed multiple carrier transmitter of claim 1, further comprising a third data encoder for producing third transmit data, the third data encoder coupled to the digital multiplexer, and the multiplexer control signal selecting one of the first, second, and third data encoders according to the predetermined transmit schedule.

7. The time multiplexed multiple carrier transmitter of claim 6, further comprising a fourth data encoder for producing fourth transmit data, the fourth data encoder coupled to the digital multiplexer, and the multiplexer control signal selecting one of the first, second, third, and fourth data encoders according to the predetermined transmit schedule.

8. The time multiplexed multiple carrier transmitter of claim 1, further comprising a frequency source coupled to the multiplexer control circuit through a frequency control input and to the transmit frequency upconverter.

9. The time multiplexed multiple carrier transmitter of claim 8, wherein the multiplexer control circuit produces a frequency selection signal on the frequency control input, coordinated with the multiplexer control signal to select a predetermined transmit frequency for each of the first and second transmit data.

10. A method for time multiplexed multiple carrier transmission, the method comprising:

applying first transmit data from a first data encoder to a digital multiplexer;

applying second transmit data from a second data encoder to the digital multiplexer;

generating a multiplexer control signal according to a predetermined transmit schedule;

digitally multiplexing between the first and second transmit data under control of the multiplexer control signal to generate a transmit signal;

frequency upconverting the transmit signal to provide an upconverted transmit signal; and

power amplifying the transmit signal for transmission.

11. The method of claim 10, wherein generating comprises generating the multiplexer control signal according to a predetermined transmit schedule that selects the first data encoder for a different duration than the second data encoder to deliver a predetermined target power.

12. The method of claim 10, wherein frequency upconverting comprises digital frequency upconversion to provide an upconverted signal.

13. The method of claim 12, further comprising digital to analog converting the upconverted transmit signal.

14. The method of claim 10, further comprising digital to analog converting the transmit signal.

15. The method of claim 10, wherein applying first transmit data comprises applying first intermediate frequency upconverted data.

16. The method of claim 15, wherein applying second transmit data comprises applying second intermediate frequency upconverted data.

17. The method of claim 10, further comprising applying at least three channels of transmit data to the digital multiplexer, and wherein digitally multiplexing comprises digitally multiplexing between the first, second, and at

least third transmit data under control of the multiplexer control signal to generate a transmit signal.

18. A time multiplexed multi-carrier signal selector comprising:

a first transmit data input;

a second transmit data input;

a digital multiplexer coupled to the first and the second transmit data inputs, the digital multiplexer including a transmit signal output and a multiplexer control input;

a transmit frequency upconverter coupled between the transmit signal output and the power amplifier, the transmit frequency upconverter including a transmit frequency control input; and

a multiplexer control circuit coupled to the multiplexer control input, the transmit frequency control input, and an intermediate frequency control input, the multiplexer control circuit coordinated by a transmit schedule to assert an intermediate frequency selection signal, a transmit frequency selection signal and a multiplexer control signal for transmitting data on each of the first and second transmit data inputs at preselected frequencies.

19. The time multiplexed multi-carrier signal selector of claim 18, further comprising at least one additional transmit data input coupled to the multiplexer.

20. The time multiplexed multi-carrier signal selector of claim 18, wherein the transmit schedule provides a non-uniform time division between the first and second transmit data inputs.

21. The time multiplexed multi-carrier signal selector of claim 20, wherein the transmit schedule provides a non-uniform time division between the first and second transmit data inputs based on a target delivered power.

22. The time multiplexed multi-carrier signal selector of claim 20, further comprising a first intermediate frequency upconverter coupled to the first transmit data input and the intermediate frequency control output.

23. The time multiplexed multi-carrier signal selector of claim 22, further comprising a second intermediate frequency upconverter coupled to the second transmit data input and the intermediate frequency control output.